REMARKS

Reconsideration and further examination of this application is respectfully requested. The Office Action mailed on September 27, 2004 and the references cited have been carefully reviewed and considered. Claims 17-34 are cancelled without prejudice and new claims 35-53 are presented for consideration.

In brief, the present claimed invention is directed to a protective enclosure for a separate touch screen device having a LCD touch screen that is used interactively to display information and capture inputs. The claimed protective enclosure is has a shell that is substantially rigid and substantially crush-resistant that substantially surrounds the touch screen device. The protective enclosure further provides an elevated protective rim that substantially surrounds a perimeter of the touch screen and protects the touch screen from breakage. The protective enclosure is submersibly watertight and includes a flexible protective membrane that allows interactivity while retaining submersible watertightness. The protective enclosure has grip-enhancing structures in one embodiment that allow the protective enclosure to be securely held by hand in slippery conditions. The protective enclosure is larger than the touch screen device in one embodiment to accommodate touch screen devices of various types and sizes in a single embodiment. The larger size of the protective enclosure also provides a gap between the shell of the protective enclosure and the touch screen device. The gap may include compressible material or air which isolates the touch screen device from the protective enclosure so that mechanical shock or crushing forces are not transmitted to the touch screen device. The protective enclosure has a flexible protective membrane that is integrally fixed to a shell of the protective enclosure. The flexible protective membrane is disposed over the touch screen and has a smooth service on the backside that is disposed over and adjacent to the touch screen so that tactile inputs on the front side of the flexible protective membrane are communicated through the membrane to the touch screen. The touch screen is at least partially transparent in portions to allow the user to view at least portions of the touch screen and enter information through the flexible membranes. Recessed areas may be provided in the flexible protective membrane that aligns with the areas of tactile input to the touch screen. The recessed area has a perimeter edge that provides tactile feedback. The recessed areas are sufficiently thin to allow tactile inputs to be transmitted through the

flexible protective membrane to the touch screen. The flexible protective membrane may have textures, colors, and printing corresponding to predetermined areas of the touch screen device.

Rejection under 35 U.S.C. § 102

Claims 17, 18, 23, 27, 28, 33 and 34 were rejected as being anticipated by U.S. Patent No. 6,068,119 to Derr et al. (hereinafter "Derr"). Claims 17-34 have been cancelled without prejudice and new claims 35-53 have been added which clearly distinguish from Derr, thus rendering this rejection moot.

Derr discloses a deformable protective housing that fits snugly, i.e. with zero-play (col. 1, line 46-49), around an electronic instrument. The protective housing of Derr purports to differ from prior art by providing a housing that is dimensionally stable, i.e., not flaccid, that is thick enough is certain areas to inhibit puncturing of the housing by sharp objects (col. 1, lines 61-65). The housing of Derr must necessarily be thin enough and deformable enough in certain areas to enable the user to push the area of the housing opposite the opening with a force that aids in the removal of the device (col. 3, lines 18-24). This of course in necessitated by the zero-play fit of the housing to the device.

The housing of Derr has a snap-on lid (4) that operates much like "Tupperware" brand containers that relies on an "elastically flexible" sealing lip (8) and circumferential groove (14) on the upper housing part to engage a circumferential rib (12) on the lower housing part. Independent claim 1 of Derr recites "said upper and lower housing part being sealingly engageble and releasably connected with each other" which according to Derr requires elastically flexible materials (col. 2, line 16-18).

Derr further teaches that "it is advantageous to form the operating area integral with the protective housing, and from the same material." The difference cited between the necessarily flexible operating area of the housing, and other portions of the protective housing is the thickness of the walls. (Col. 1 line 64).

Derr does not disclose a protective device for a touch screen device that has an LCD touch screen as set forth in claim 35. The protection needed for the device of Derr and an LCD touch screen of PDAs is much different. LCD touch screens are used to both display and capture input and have a large area that is made of thin glass and other layers

that are susceptible to breakage when pressure is applied. For example, a hiker or an emergency service worker may carry a PDA along with other equipment which may press upon the PDA causing the LCD touch screen to break. The protective device of Derr does not protect delicate LCD touch screen displays of PDAs from breakage.

Derr does not disclose a protective shell that is substantially crush-resistant. As discuss above, the protective housing of Derr must be made of an elastically flexible material (Col. 2, lines 16-18). Derr teaches the use of materials that have a degree of deformability such as soft PVC, thermoplastic elastomers (TPE), or thermoplastic polyurethanes (TPU) which all have a low flexural modulus (measured in ksi, that is, kilopounds force per square inch). For example, soft PVC has a median flexural modulus of approximately 2.76 ksi, TPE has a median flexural modulus of approximately 177 ksi, TPU has a median flexural modulus of approximately 177 ksi. The low flexural modulus, i.e., inherent elastically flexible material required for operability of the housing of Derr, precludes the protective housing of Derr from being substantially crush-resistant as set forth in Applicant's claims.

Applicant's claimed invention clearly distinguishes from Derr because Applicant's claimed invention provides sufficient protection for an LCD touch screen from water, shock and crushing force while at the same time providing a high degree of interactivity for productive use of a touch screen device having an LCD touch screen. For example, one embodiment of Applicant's claimed invention has been demonstrated to protect a touch screen device when subjected to a significant force such as a vehicle running over the enclosed touch screen device in a field. The substantial crush resistance is enhanced by the use of strong rigid materials that have a relatively high flexural modulus such as polycarbonate, as set forth in claim 38, that prevents deformation of the enclosure. For example, claim 35 cites "said shell being substantially rigid and substantially crush-resistant". Further, Applicant's claimed invention has enhanced crush-resistance because is capable of enclosing and substantially surrounding said touch screen device, i.e., Applicant's claimed invention has no open-ended members that lack structural support because open-ended members would be susceptible to movement when subjected to a crushing force. Applicant's substantially surrounding shell being substantially rigid and substantially crush-resistant rigid, as disclosed and claimed in

claims 35, 36 and 47 and depending claims provides the necessary crush resistance to protect a touch screen device.

Derr teaches and claims a protective device that has "zero-play", i.e., a protective device that fits snugly around the device to be protected and conforms to the shape of the device to be protected. Even if the protective device of Derr is dimensionally stable, i.e., not flaccid, any pressure from crushing or dropping the protective enclosure is directly transmitted to the enclosed device thus a substantially crush-resistant shell is not provided.

Applicant's claimed invention clearly distinguishes from Derr. Claim 36 recites "wherein said shell is larger than said touch screen device so that there is a gap between an outer surface of said touch screen device and an inner surface of said shell so that said shell may flex when subjected to a crushing force without transmitting said force directly to said touch screen device". Claim 40 recites "The protective enclosure of claim 36 further comprising at least one shock-absorbing insert disposed in said gap between said touch screen device and said shell". The presence of either air or a shock absorbing insert in a gap formed between the enclosure and the touch screen device enhances the level of protection to the touch screen device by providing room for the enclosure to "flex when subjected to a crushing force without transmitting the force directly to the touch screen device" as set forth in claims 36 and 47.

Derr does not disclose a shell that has an elevated protective rim substantially surrounding a perimeter of said touch screen. Figure 1 of Derr shows that the upper housing (4) is elevated with respect to the operating area (6). However, there is no elevated protective rim substantially surrounding a perimeter of a touch screen as disclosed and claimed by Applicant. If a touch screen were placed in the protective sheath of Derr and an object were to be placed horizontally across the touch screen, the object would apply direct pressure to the LCD touch screen causing it to flex and crack because there is no elevated protective rim substantially surrounding the perimeter of an LCD touch screen.

Applicant's claimed invention has "an elevated protective rim substantially surrounding a perimeter of said touch screen of said touch screen device" as cited in claims 35, 36 and 47. The elevated protective rim substantially surrounding a perimeter

of the touch screen protects the screen from pressure and breakage. For example, if the protective enclosure of claims 35, 36, and 47 has a heavy object laid across the elevated protective rim horizontally, vertically, or diagonally, the force from the object will be supported by the elevated rim and the enclosure but will not be transmitted to the touch screen of the touch screen device.

Derr does not disclose a compressible gasket that forms a watertight seal. The protective device of Derr uses a "rib and groove" mechanism to snap an upper housing part to a lower housing part, much like the lid of a "Tupperware" container snaps to the container. Any variance in the fit of the rib of the lower housing part and the groove of the upper housing part provides a small pathway for water to leak into the protective device and damage the enclosed device. Such variances may be caused by tolerances in the manufacturing process, wear from repeated use, or deformation due to heat or cold, or physical deformation such as when the protective device is pressed against an object. Further, the upper housing part of the protective device of Derr is designed to "pop off" by hand which means that it is inherently prone to being dislodged accidentally if it is dropped, scraped against a surface, stepped upon, or squeezed. Also, the snapping rib of Figure 3D further demonstrates the necessarily deformable nature of the protective device, which deformability allows the upper housing and lower housing to snap together, as described and shown in Derr. Further, Derr does not disclose a clamp connected to a shell that compresses a gasket so that a submersibly watertight enclosure is provided.

Applicant's invention clearly distinguishes from Derr by providing a watertight enclosure that comprises a "compressible gasket disposed in a perimeter portion of said shell" as cited in claim 35. The compressible gasket provides an enclosure that remains submersibly watertight regardless of variances in the manufacturing of the shell because the compressible gasket expands to fill in any gaps or deformities in the shell whether inherent or cause by environmental stress. Further, the enclosure remains submersibly watertight under conditions of heat or cold and also when subjected to pressure. Claim 35 also recites a clamp that "a clamp connected to said shell that clamps said shell in a closed position so as to compress said gasket when said shell is clamped closed providing an enclosure that is submersibly watertight". The clamp of Applicant's invention in

combination with the submersibly watertight gasket and the rigid crush resistant shell provide an enclosure that remains submersibly watertight when dropped, scraped against a surface, stepped upon or squeezed.

Regarding Applicant's claims 43-46, Derr does not disclose any enhancements to a flexible protective membrane that provide visual and tactile feedback which help a user to operate a touch screen device correctly in harsh conditions. For example, there are no recessed areas in a flexible protective membrane that guide a user's finger or a stylus to a particular area of a touch screen.

Embodiments are disclosed that significantly enhance the ability of a user to interact in certain intended ways. For example, claim 43 recites "at least one recessed area in said front side of said flexible protective membrane, said recessed area disposed to align with at least one predetermined region of said touch screen of said touch screen device when said touch screen device is disposed in said enclosure, said recessed area having a perimeter edge that provides tactile feedback, said recessed area being sufficiently thin so that said tactile inputs are transmitted through said flexible protective membrane to said touch screen of said touch screen device when said touch screen device is disposed in said enclosure". Applicant's invention thus clearly distinguishes from Derr because the recessed areas of the flexible protective membrane, as claimed, make it easy for a user to interact with certain areas without a user's stylus or finger accidentally slipping and activating un-intended functions. Likewise, certain functions may be visually and tactilely distinguished as set forth in claims 43-46 so that those functions are not unintentionally executed. For example, in some applications it is advantageous to protect certain functions, such as a clear or reset function, from being unintentionally touched.

Regarding claims 52 and 53, the protective enclosure product produced by the method of claim 52 differs materially from a product produced be the method of claim 53. Specifically, for embodiments targeted at applications that have a particularly sensitive touch screen or specific precisely defined interaction areas, the thermoforming method of claim 52 "enables thin-walled parts as required for precise recessed areas and an extensive choice of patterns, finishes, and textures." Injection molding, as cited in

claim 53, may be suitable for applications where the degree of precision or the thinness of the recessed areas is less critical.

Therefore, Applicant's claimed invention provides a highly interactive, submersibly watertight, crush resistant, protective enclosure for a touch screen device having and touch screen that clearly distinguishes in numerous ways from the protective device of Derr.

Rejections under 35 U.S.C. § 103

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Derr in view of U.S. Patent No. 6,415,138 to Sirola. Claims 20-22, 24-26 and 29-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Derr in view of Sirola, and further in view of U.S. Patent No 6,456,487 to Hetterick. U.S. Patent 6,536,589 to Chang was not relied upon but made of record by the Examiner in the second Non-Final Office Action. Claims 17-34 have been cancelled without prejudice and new claims 35-53 have been added that distinguish from Derr, Sirola, Hetterick and Chang taken either separately or in combination, thus rendering these rejections moot.

Sirola discloses a hinged front cover for a wireless communication device and a method of manufacturing a wireless communication device with a hinged front cover. The wireless communication device (1) includes a housing (2), a touch sensitive display (3), and a cover part (4). The cover part includes a transparent and flexible activation means (5). The device of Sirola is not submersibly watertight, crush-resistant, or impact resistant, as set forth in claims 35-40, and 47. Sirola does not disclose, teach or suggest that the flexible activation means or cover have recessed areas having a perimeter edge that align with pre-determined areas of a touch screen device, as set forth in claim 43. Sirola does not disclose, suggest or teach recessed areas may having uniquely distinguishing colors, printing, and textures as set forth in claims 44-46.

Hetterick discloses a hinged enclosure for a wireless communications device. The device of Hetterick is not submersibly watertight, crush-resistant, or impact-resistant, as set forth in claims 35-40, 47. Hetterick does not disclose, teach or suggest a cover having recessed areas having a perimeter edge that align with pre-determined areas of a touch screen device, as set forth in claim 43. Nor does Hetterick disclose, suggest or teach

recessed areas may having uniquely distinguishing colors, printing, and textures as set forth in claims 44-46.

Chang discloses an open-ended protective sleeve for a PDA with a hingedly connected cover for a touch screen portion of a PDA. The device of Chang is not submersibly watertight, crush-resistant, or impact-resistant, as set forth in claims 35-40, and 47. Chang does not disclose, teach or suggest that the flexible activation means or cover having recessed areas having a perimeter edge that align with pre-determined areas of a touch screen device, as set forth in claim 43. Nor does Chang disclose, suggest or teach recessed areas may having uniquely distinguishing colors, printing, and textures as set forth in claims 44-46.

Neither Sirola, nor Hetterick, nor Chang make up for the deficiencies of Derr. All of Sirola, Hetterick, and Chang fail to disclose, teach or suggest "a shell being substantially rigid and substantially crush-resistant" that "is capable of enclosing and substantially surrounding said touch screen device" as set forth in Applicant's claims 35, 36 and 47. For example, Sirola, Hetterick and Chang all include a hinged protective cover over the screen portion. Besides being inherently permeable or leaky with respect to water, hinged covers also by nature are not rigid and substantially crush-resistant because the hinge has some "give" so that when the portion of the device connected to the hinge is acted upon by a crushing force, the hinge will pivot causing the crush force to be substantially transmitted to the device being covered.

There is no crush-resistant shell and no elevated protective rim substantially surrounding a perimeter of the touch screen in Sirola, Hetterick, or Chang. If a heavy object were to be placed on top of the cover of Sirola or Chang or on the device of Hetterick, the force of the heavy object would be transmitted to the touch screen, potentially causing the touch screen to break. Even, assuming *arguendo*, that the devices of Sirola and Derr, or the devices of Sirola, Derr and Hetterick could be combined, this would not provide a shell that is capable of enclosing and substantially surrounding a touch screen device wherein the shell is made of substantially crush resistant rigid plastic, as set forth in Applicant's claims 35, 36 and 47.

None of the cited references taken separately or together teach, suggest, or disclose the use of an elevated protective rim substantially surrounding a perimeter of an

enclosed touch screen device. Even if Sirola could be combined with Derr and with Hetterick, it would not result in a device having an elevated protective rim substantially surrounding a perimeter of the touch screen and thus would not protect and enclosed touch screen device from breakage due to the force of an object spanning the touch screen horizontally or vertically. Applicant's claims 35, 36 and 47 recite a "shell having an elevated protective rim substantially surrounding a perimeter of said touch screen" that "protects said touch screen from deflection and breakage" and thus clearly differentiates from the cited references.

As described above Derr has an inherent lack of submersible watertightness due to the use of a rib and groove snap system that is susceptible to leakage, and further due to the lack of a compressible submersibly watertight gasket. This lack of submersible watertightness of Derr is in no way overcome by any of Sirola, Hetterick or Chang. As mentioned above, any of the hinged implementations are susceptible to leakage through the hinges. Further, none of the cited references have "a compressible submersibly watertight gasket that is disposed in a perimeter portion of said shell" nor "a clamp connected to said shell that compresses said watertight gasket when said shell is clamped closed providing an enclosure that is submersibly watertight," as set forth in claims 35, 36, and 47.

Since Derr discloses and teaches a protective device that has "zero-play," i.e., snugly conforms to the shape of the device to be protected, the combination of Derr with Sirola and Hetterick would not result in a device with a "gap between an outer surface of said touch screen device and an inner surface of said shell" as set forth in claim 36. Nor do any of the references disclose, teach or suggest a shock absorbing insert, as set forth in claim 40.

None of the cited, including Derr, Sirola, Hatterick, or Chang, disclose, suggest or teach, a protective membrane with recessed areas having a perimeter edge formed to align with predetermined regions of a touch screen as set forth in claim 43. Recessed areas guide a user's finger or stylus from slipping and inadvertently depressing an unintended area. Further, for a firefighter with gloved hands (page 1, line 28) or maintenance mechanic using the enclosure (page 6, line 16), in conjunction with other protective gear such as gloves, the recessed areas guide the user to specific areas on the

touch screen and minimize the likelihood that the user will inadvertently depress two areas simultaneously or inadvertently press the wrong area.

Further, the use of distinct textures as set forth in claim 44, the use of printed areas as set forth in claim 45 and the use of colors is set forth in claim 46, are not shown or suggested by Sirola or by Hetterick.

Claims 47-53 include similar limitations which distinguish from the cited references for the same reasons as set forth above.

Hence, even assuming arguendo, that the references could be combined, such a combination still fails to teach the novel and unique aspects of Applicant's claimed invention since the combination of these three references does not disclose the limitations of Applicant's claims 35-53.

Applicant's claimed membrane, when formed using thermoforming, as set forth in claim 52, has unobvious beneficial differences from the cited references due to the process of thermoforming. Specific advantages of thermoforming include the ability to produce thin-walled parts such as required for detailed/precise recessed areas, and the extensive choice of patterns, finishes and textures. None of these unobvious differences are disclosed, taught, or suggested in any of Derr, Sirola, Hetterick, and Chang.

Hence, even assuming arguendo, that the references could be combined, such a combination still fails to teach the novel and unique aspects of Applicant's claimed invention since the combination of these two references does not disclose the limitations of Applicant's claims 35-53

U.S. Patent 6,536,589 to Chang was not relied upon but made of record by the Examiner in the second Non-Final Office Action. Chang discloses a protective device for a PDA.

Applicant's invention clearly distinguishes from Chang. Chang does not disclose a shell that is capable of enclosing and substantially surrounding a touch screen device. The device of Chang has protection shell (11) that has an opening (15) at one end which opening allows the unsupported members (17) to deform and apply pressure to a PDA when pressure is applied to the unsupported members.

Chang discloses a cover (12) which is hingedly connected to shell (11). Chang fails to disclose a protective enclosure having a shell that is made of a substantially crush-

resistant plastic and has an elevated protective rim substantially surrounding the touch screen that protects the touch screen from breakage as set forth in claims 35, 36 and 47. Indeed, pressure applied to cover (12) of Chang would be directly transmitted to a PDA and thus fail to provide crush-resistant protection.

Likewise, Chang does not disclose, teach, or suggest recessed areas in the protective membrane that provide tactile feedback. Nor does Chang disclose teach or suggest the other limitations of Applicant's claims 35-53.

For all of these reasons, the above-identified application, as amended, is now considered to be in condition for allowance, and such action is earnestly solicited.

Respectfully submitted this 22nd day of February 2005.

COCHRAN FREUND & YOUNG LLC

By: _____

William W. Cochran #26,652
Attorney for Applicant
2026 Caribou Drive, Suite 201
Fort Collins, CO 80525
Telephone: 970-492-1100
Telefax: 970-492-1101

Customer No. 27479